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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/661,376

09/12/2003

Timo Hakasalo

915-007.039

6698

4955 7590 09/19/2007

WARE FRESSOLA VAN DER SLUYS & ADOLPHSON, LLP  
BRADFORD GREEN, BUILDING 5  
755 MAIN STREET, P O BOX 224  
MONROE, CT 06468

EXAMINER

PANWALKAR, VINEETA S

ART UNIT

PAPER NUMBER

2611

MAIL DATE

DELIVERY MODE

09/19/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/661,376

Applicant(s)

HAKASALO ET AL.

Examiner

Vineeta S. Panwalkar

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

1. Claims 1-6, 8-15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Naruse et al. (US 6263010 B1, previously cited), hereinafter, Naruse in view of in view of applicant's own admitted prior art (previously cited), hereinafter, AOAPA.

1a. Regarding claims 1, 8, 10 and 17, Naruse discloses spread spectrum and apparatus in a mobile communication system with a receiving unit (See column 5, lines 25-28 and Fig. 2, wherein search receiver 23 is interpreted as claimed receiving unit), wherein is disclosed a method for:

- synchronizing the phase of a code available at a receiving unit with the phase of a corresponding code of which samples are received at said receiving unit (See column 6, lines 29-40 and Figs. 2 and 3, wherein search receiver 23 is interpreted as claimed receiving unit, the PN code supplied by PN code generation circuit 231 (claimed storing portion as per claims 10 and 17) is interpreted as claimed available code, pilot signals are interpreted as claimed corresponding code and correlating is interpreted as claimed synchronizing (Also see office action mailed 3/26/07)), comprising:
  - comparing a received code sample with different samples of said available code (See column 1, lines 23-62; correlating two signals inherently involves comparing them to find the degree to which they match, hence correlating, as disclosed by Naruse, is interpreted as claimed synchronizing),
  - shifting the respective sample of said available code in phase for each comparison by a predetermined amount until a correspondence with said received code sample is determined (See column 1, lines 23-62; correlation inherently involves claimed phase shifts and comparisons) or until an interrupt of said synchronization occurs, wherein said synchronization is continued

after the interrupt with a newly received code sample and with available code samples proceeding from the code phase of said available code reached in said synchronization before said interrupt (See Figs. 2, 3 and column 6, lines 45-54. When the power at receiver 23 is turned off (i.e. when receiver 23 receives a power off signal), the correlating process is interrupted and hence the turning off of the power is interpreted as claimed received interrupt. During power off, PN period holding counter 234 operates using power supplied from a backup power supply 32 and holds the phase information of the PN code of the PN code generation circuit 231 obtained before power is turned off. When power is turned on again, a phase derived on the basis of the phase information of the PN code thus held is supplied to the PN code generation circuit 231 as an initial phase. Thus, upon power on, correlation of newly received pilot signal is continued with code samples proceeding from the code phase of the PN code reached before power was turned off. Thus, Naruse discloses how synchronization is continued after the occurrence of an interrupt with a newly received code sample and with available code samples proceeding from the code phase of the available code reached in said synchronization before said interrupt, as claimed).

Thus, Naruse discloses all the limitations claimed, but fails to disclose whether the interrupt may be measurement related.

However, AOAPA discloses claimed measurement related interrupt (Page 4, lines 10-26 of the specification).

Thus, a person of ordinary skill in the art would have been motivated to use Naruse's synchronization technique of proceeding from the code phase of the available code reached in synchronization before an interrupt even when the interrupt is measurement related (as disclosed by AOAPA) because Naruse's technique allows for synchronization acquisition to be achieved in a shorter time after an interrupt (Column 3, lines 57-68).

Regarding claim 8, Naruse and AOAPA also show corresponding means. Naruse further show means for receiving samples of a code via the air interface (Fig. 2, antenna 21 receives claimed samples).

Regarding claims 10 and 17, Naruse and AOAPA also show corresponding apparatus and Naruse further show claimed transmitting unit of claim 10 (Column 1, lines 15-34).

1b. Regarding claim 2, Naruse and AOAPA disclose all the limitations claimed (See 1a above). Naruse further discloses the method wherein:

- a specific code phase of the available code is determined after the interrupt by shifting the available code employed before the interrupt by an amount corresponding to the time elapsed between the time of reception of the last code sample before said interrupt and the time of reception of the new code sample after said interrupt (See Figs. 2,3 and 5, and column 7, lines 15-52. When power is turned on again (after claimed interrupt), a phase derived on the basis of the phase information of the PN code thus held is supplied to the

PN code generation circuit 231 as an initial phase. Thus, the control circuit 13 supplies a phase derived on the basis of the phase information of the PN code held in the PN period holding counter 234 to the PN code generation circuit 231 of the search receiver 23, and specifies a search width of the PN code. This search width is provided in order to ensure acquisition of the short code synchronization, in the case where the mobile station has moved in a sector from the time point of turning off power, by considering the propagation time difference of the pilot signal between before the movement and after the movement (interpreted as claimed elapsed time). The search width is set to a value larger than the propagation delay time difference corresponding to the maximum diameter of the sector. Thus, the search width is used to shift the phase of the PN code stored in the holding counter 234 based on the time difference of the received pilot signal before power off and after power is turned back on, i.e. based on claimed elapsed time).

Further, AOAPA discloses claimed measurement related interrupt (Page 4, lines 10-26 of the specification).

1c. Regarding claims 3 and 12, Naruse and AOAPA disclose all the limitations claimed (See 1b and 1a above). Naruse also shows method wherein:

- said synchronization is equally ended when a comparison has been carried out without success for all code phases that can be reached with predetermined shifts (Column 2, line 67- column 3, line 15. If the

synchronization acquisition of the pilot signal of acquisition subject cannot be conducted while the spreading code is shifted by a predetermined value, then preferably the generation phase of the spreading code is reset to a predetermined reference phase. Thus, in the case where the pilot signal of acquisition subject could not be acquired during a predetermined phase shift interval for some reason, repetition of the synchronization acquisition operation within a predetermined phase range for an indefinite time is prevented. This means that the synchronization as claimed is ended when no correlation is found using predetermined shifts.)

- 1d. Regarding claims 4 and 13, Naruse and AOAPA disclose all the limitations claimed (See 1c and 1a above). Naruse further discloses the method wherein:
- said code phase of said available code is shifted by a first predetermined amount until code samples spanning the entire code have been checked, and wherein, in case no correspondence between a received code sample and an available code sample is determined with the resulting code phases, said code phase is shifted once by a different predetermined amount for further comparisons (Column 2, line 67- column 3, line 15. If the synchronization acquisition of the pilot signal of acquisition subject cannot be conducted while the spreading code is shifted by a predetermined value (claimed first predetermined amount), then preferably the generation phase of the spreading code is reset to a predetermined reference phase (claimed different



predetermined shift), and the synchronization acquisition of the pilot signal is conducted from the reference phase (Thus, further comparisons are performed, as claimed). By doing so, a shift to the synchronization acquisition from the reference phase is conducted in the case where the pilot signal of acquisition subject could not be acquired during a predetermined phase shift interval for some reasons. Therefore, repetition of the synchronization acquisition operation within a predetermined phase range for an indefinite time is prevented).

- 1e. Regarding claims 5 and 14, Naruse and AOAPA show all the limitations claimed (See 1d and 1a above). Naruse further discloses the method wherein:
- said code samples are received at said receiving unit by a communication network in form of a pilot signal (Fig. 3. The received code samples are in the form of a pilot signal. See abstract. Further, Naruse explains how pilot signals are acquired during idle period. (Fig. 11 and column 8, line 63- column 9, line 6). The waiting state is interpreted as claimed idle period.).

Further, AOAPA discloses that pilot signals are used for synchronization during Idle Period, Down Link (IPDL), as claimed (See page 4 of specification, lines 10-26).

Thus, it would have been obvious to a person of ordinary skill in the art to use the synchronization method suggested by Naruse during the IPDL as suggested by

AOAPA because IPDL provides a dedicated period during which synchronization can be achieved, thereby making it more effective.

1f. Regarding claims 6 and 15, Naruse and AOAPA disclose all the limitations claimed (See 1e and 1a above). AOAPA further discloses the method wherein:

- a received code sample is stored in a dedicated random access memory (RAM), from which it is retrieved for said synchronization calculations ((See page 4 of specification, lines 10-26).

Thus, it would have been obvious to a person of ordinary skill in the art to use a dedicated RAM as disclosed by AOAPA to store the received code samples, so that the samples are available as soon as they are needed for synchronization.

1g. Regarding claim 9, Naruse and AOAPA show all the limitations claimed (See 1a above). Further, AOAPA shows the receiving unit:

- which is a location measurement unit for a location system. (Page 2 of specification, lines 15-33).

Thus, it would have been obvious to a person of ordinary skill in the art to use the receiving unit as a location measurement unit (LMU) for a location system because it would allow the system to determine the current geographic location

of a mobile station within a communication system. (Page 2 of specification, lines 10- 15).

- 1h. Regarding claim 11, Naruse and AOAPA show all the limitations claimed (See 1a above).

Naruse further discloses that the communication system is used in a code division multiple access (CDMA) environment (Column 1, lines 1-10), but fails to explicitly mention whether the CDMA is wideband.

However, AOAPA shows the system:

which is a wideband code division multiple access (WCDMA) system.

Thus, it would have been obvious to a person of ordinary skill in the art to use WCDMA because increases network capacity.

2. Claims 7 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Naruse in view of AOAPA as applied to claims 6 and 1 above, and further in view of Jeong et al.(US 20010014086 A1, previously cited), hereinafter, Jeong.

- 2a. Regarding claims 7 and 16, Naruse and AOAPA disclose all the limitations claimed (See 1f and 1a above).

Naruse also shows the method wherein synchronization involves performing correlation on respective pair of received pilot sample and available PN samples (See 2a above).

However, both Naruse and AOAPA fail to explicitly mention whether the correlation may be performed using a matched filter.

In the same field of endeavor, however, Jeong discloses apparatus and method for acquisition of a wide band code division multiple access signal (WCDMA) wherein:

- a matched filter correlator is used (Paragraph [0007]).

Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the matched filter correlator disclosed by Jeong, because it that it takes a shorter time for acquisition as it can test different phases at every chip time (Paragraph [0007]).

### ***Conclusion***

3. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed

within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

***Contact Information***

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vineeta S. Panwalkar whose telephone number is 571-272-8561. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR

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system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
MOHAMMED GHAYOUR  
SUPERVISORY PATENT EXAMINER